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UTCS ComputerNews

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Research Year-End

The fiscal year-end for most research grants, especially those issued by NSERC and MRC (3-500-NNN-NN to 3-699-NNN-NN), is March 31. However, in order to complete accounting to the granting agencies by that date, the final date for billing computing services to an Encumbrance Memo will be Wednesday, March 25. (For purchases to be paid by debit memo, the deadline is also March 25.)

To ensure that all charges for services to come off the grant are billed prior to the cancellation of the Encumbrance Memo, researchers should arrange for service completion or purchase of supplies as early in March as possible. This includes making sure all jobs are cleared from the system HOLD queues. If jobs in the queues are not printed or purged until after March 25, the researcher will continue to be charged.

When an Encumbrance Memo is cancelled and there is no other source of funding, such as a departmental subsidy, the entire account's allocation is removed, the account is locked, and service is suspended. A new Encumbrance Memo should be received by UTCS **no later than March 20** if service is not to be interrupted. An Encumbrance Memo based on Ledger 1 funds is not affected by this deadline.

For additional information on accounting procedures, obtain a copy of the UTCS GUIDE TO PRODUCTS AND SERVICES: Accounting, available from UTCS Accounting Services, Room 337, McLennan Labs. Copies of the Encumbrance Memo form are available from the University Purchasing Department.

Marg Doherty
DOHERTY at UTORONTO

Microcomputer News

Bulletin Board System

You may be aware of the plans to make the BBS a multiuser one. This was to be done by replacing FIDO, which runs under DOS, with UNI-ACCESS, which runs under UNIX, and massaging it to run under Xenix. We now have all the equipment necessary to go multiuser: ample serial ports and fixed-disk storage (80M), a dedicated AT to run on, and the Xenix software package.

Massaging the UNIX BBS software to run under Xenix, and properly testing it, requires many manpower hours. The UNI-ACCESS source code is written in C and must be moved from GP UNIX to our AT running Xenix, compiled, and tested. Unfortunately, Greg Stopelli, your BBS SYSOP for the past two years, has resigned from UTCS, and due to fiscal constraints, we are unable at present to replace him in the Micro Support Group. (As of mid-January, Chris Handley and Paul Roth are your new SYSOPs.) Consequently, it will be a long time before we can offer a multiuser service. In the meantime, we have moved the BBS to the new AT but will continue using single-user FIDO.

Grade Calculator

David Hillock, formerly of the Faculty of Social Work, has developed a program for the IBM PC called Grade Calculator, which calculates and assigns letter grades to students' assignments. Aimed at instructors and professors, the program manages up to ten courses, with ten assignments within each course. University of Toronto faculty and students can purchase the program and the 30-page tutorial/user's guide for $25.00. A free demonstration package can be obtained from the UTCS Micro Lab if you bring in a formatted blank diskette, or it can be downloaded from the UTCS Microcomputer BBS. For further information, contact David Hillock at 585-6533 during business hours.

continued...

Microcomputer News continued

ProComm

We are distributing a customized version of ProComm 2.4.2, which we call U of T ProComm. When used in conjunction with our IBM mainframes (CMS, TSO, WYLBUR), this version includes an excellent IBM 3270 terminal emulation.

In most other respects, U of T ProComm is the same as Version 2.4.2. We will be distributing our version under a site license; this customized version is not shareware. It is available **free** to all U of T faculty, staff, and students. Just bring two blank, formatted, double-sided diskettes to the Micro Lab for copying purposes. A license agreement must be signed and a ProComm label attached to your diskettes. You will be given the ProComm .EXE file, some sample command files, a UTCS dialing directory, and a .DOC file.

All PC users who access UTCS services should obtain a copy of this ProComm.

Public Micros Available

The UTCS Education Facility offers free public access to IBM XTs for U of T faculty, staff, researchers, and graduate students. The Facility, when not in use for courses or development, is open to these users during business hours.

The room offers ten IBM XTs, each with one floppy-disk drive, connected to a 60M file server in a Novell network. Each user has a minimum of 2M on the file server. Although permanent storage of user files is prohibited, you may bring your files on floppy, load them onto the hard disk, and process them while you are in the Facility. Before you leave, delete your files from the file server. Because we are using Novell LAN software, comprehensive file security is in force. You are prevented from accessing other users' files and safeguarded from other users accessing your files.

The network is easy to use, and offers SAS/PC, WordPerfect, BASIC, ProComm, and PC-DOS 3.2 via an opening menu. A handout is provided to explain how to access the network and what further facilities exist. Network materials are available for signout.

We encourage micro users to make use of this free Facility. Although a number of courses are taught in the room, many free time slots are available. (No appointment is necessary.) A schedule of course bookings is posted outside the Facility, located in Room 308 of the Koffler Centre, 214 College St.

Macintosh <--> PC File Transfers

The UTCS Micro Lab is about to acquire the TOPS Network from Centram. It consists of software for the Macintosh, and hardware and software for the IBM PC, providing direct file transfer from machine to machine. While many other methods of file transfer exist, this one is the best we have seen. The most popular transfer is for Microsoft Word, which exists in both worlds, but many ASCII text files can be transferred. The flow of information from the Mac world to/from the PC world in our Lab should increase. Also for the PC, we are obtaining TOPS PRINT, which will enable writing from the IBM PC to the Apple LaserWriter.

If you need to move files, please call Advising Services at 978-HELP.

Random Notes

- After a long delay, Nota Bene Version 2.0 has been shipped.
- Prof. Chris Plowright of the Zoology department would like to talk to those interested in getting site licenses for the statistical software packages GLIM and GENSTAT, developed at Oxford University. According to Prof. Plowright, these packages are aimed at professional statisticians more than packages such as SAS/PC. You can reach him at 978-4582.
- I am interested in hearing from users of R:BASE System V for purposes of a review in the *Academic's Guide to Microcomputer Systems*. Please call me at 978-HELP. We could also install R:BASE in the Education Facility if users are interested.
- PC-WRITE Version 7.0 has been released by Quicksoft and will soon be available on our BBS as a shareware product. It now supports PostScript printing.

continued...

Microcomputer News continued

- The IBM PC & Compatibles User Group is still meeting on the fourth Tuesday of the month from 4:00-6:00 p.m. Please let us know of any topics of interest by calling me at 978-HELP.

Paul Roth
PROTH at UTORONTO

ProComm Communications Program Seminar

This seminar, which is offered on a regular basis, introduces ProComm, a general purpose communications program. Currently available free to all U of T faculty, staff, and students, ProComm is the resident communications program in the Education Facility.

Topics include: Terminal emulation (a number of popular ones will be reviewed); the dialing directory; file transfer protocols, such as Kermit and XMODEM; command files to control automatic logon and unattended operation; and the DOS gateway, which allows you to execute DOS commands or other programs while you are still online.

Copies of ProComm will be made at no charge, but you must bring your own diskette.

To register, phone me at 978-4565.

Irene Rosiecki
ROSIECKI at UTORONTO

Focus on Microcomputer Courses

Convenience and economy have made microcomputers the choice of many members of the University community, academics and administrators alike. Those who formerly used mainframes, those who have never used a computer, even some who swore they never would, are now among the most enthusiastic micro users. Along with the increase in users comes a heavy demand for help in learning various software packages. In response to this demand, UTCS has developed three short courses; two on the word-processing package WordPerfect, and one on the statistics package SAS/PC.

The two WordPerfect courses, introductory and advanced, have been taught several times since their fall debut. They have proven so popular that more UTCS staff are now preparing to teach them. At the same time, we are also fine tuning these courses and, beginning in March, there will be a set of WordPerfect courses tailored for academic needs and another set for administrative and support staff. The first SAS/PC course was taught in January, and we expect the course will be as successful as the WordPerfect one. Please read "Introductory SAS/PC Course", later in this issue, for futher information. See the article on UTCS Noncredit Short Courses for dates and times of these courses.

Besides these, we plan to provide other micro-related short courses. The most likely possibility for the immediate future is a course in Lotus 1-2-3, a spreadsheet package. Developing a course in the IBM-oriented operating system, MS-DOS, is a high priority.

As with all of our short courses, departments or other U of T groups may arrange for a micro course to be given exclusively for their members, provided they can guarantee a full class. Such sessions are particularly beneficial for groups with special needs. The instructor can spend more time on aspects of the package that are most useful to the group (e.g., accents for foreign languages, or a particular kind of statistical application). The ten-dollar administration fee is waived for participants in one of these special courses.

continued...

Micro Courses continued

All short courses are held in the UTCS Education Facility in the Koffler Student Centre. For registration and scheduling information, please contact Irene Rosiecki at 978-4565.

Martha Parrott
PARROTT at UTORONTO

SAS Micro-to-Mainframe Link: New Version of RLINK Files

The microcomputer version of SAS allows you to connect a SAS session on a micro to a SAS session on a mainframe computer (providing you have a modem), and run the sessions in parallel. You can then run some programs on the micro and submit other programs to the mainframe, with all results coming back to the micro. Transferring SAS data sets between the micro and the mainframe is easy.

At UTCS, the mainframe session can run on CMS or TSO. The RLINK utility is described in detail in Technote SAS002 on both systems. To use this utility, a special RLINK file is required. Recently, the RLINK files have been modified, making them sturdier against communication problems.

RLINK files that allow for different modem baud rates and host systems (CMS or TSO) are distributed on installation diskettes for the SAS/PC system. New versions of the files can be obtained through the U of T Bulletin Board System (BBS). For information on accessing the BBS, call Advising Services at 978-HELP. RLINK files required to connect a micro SAS session to a CMS SAS session have also been stored on CMS. To access them on CMS, type **GETME SAS NEW** then **HELP RLINK** to identify the filenames.

The changes to the RLINK files include the following:

- *A warning during RLINK signoff of unsuccessful mainframe session logoff.* The mainframe session may remain logged on due to excessive noise on the lines. Reconnect to the mainframe session directly (using ProComm, Kermit or some other protocol), or sign on again through RLINK (see below) and close the session.
- *A warning during RLINK signon if your account is active on another line.* This may happen if someone else is using the same account at the time, or if you were already using the account from another terminal and did not close the session.
- *The possibility of reestablishing the micro-to-mainframe link should the line drop during the session.* This may happen, for instance, if you end the micro SAS session before signing off RLINK. The mainframe session remains on and you must reestablish the connection and sign off properly to avoid unnecessary charges. Simply restart the micro SAS session and sign on to RLINK again. RLINK will reconnect you to the mainframe session so you can sign off properly. The line may also drop due to a hardware problem (e.g., someone trips over your cable), but the SAS micro session will still run. You will notice that the line is dropped if a remote submit hangs up. Typing **ˆC** returns you to micro SAS. If you try to sign off when the line is dropped, the session will again hang up. You need **ˆC** (and a lot of patience) to return to the micro SAS session. Sign on to the mainframe session again (after reconnecting the cable if that caused the problem). You will likely get a warning message to which you should respond **YES**. If you were using TSO and are convinced the session is still on, enter your ID followed by the RECON parameter (e.g., TS01234 RECON). In any case, the RLINK file will sense the condition of the mainframe session and prompt you for the RECON parameter if necessary. On TSO, your old work files will still be accessible (i.e., you can start your mainframe SAS session from where you left it). On CMS, the mainframe SAS session will start afresh.

For more information on the RLINK utility, please call me at 978-5045.

Dr. Andrzej Pindor
APINDOR at UTORONTO

Introductory SAS/PC Course

A new noncredit short course, Introduction to SAS on the IBM PC, was introduced by UTCS in January. It is held in the UTCS Education Facility, which now houses ten IBM PC XTs, connected in a local area network to a file server, with two 30M hard disks, and a dot matrix printer. Each student can learn through hands-on experience.

The course, totalling eleven hours, is spread over five days. For those who are new to personal computing, Day 1 includes a review of basic DOS commands used with SAS, as well as detailed exercises using the SAS Display Manager and Help windows. The sessions on Days 2 through 4 explore the use of SAS data steps, from the simplest applications to topics including data set merging and concatenation, use of external DOS files, and the creation of permanent SAS data sets. Students have ample time to practice these skills while learning a variety of SAS procedures, including PROCS PRINT, MEANS, FREQ, PLOT, CHART, SORT, and TTEST. On Day 5, with individual guidance from the instructor, students have the opportunity to begin developing their research projects using SAS. Work accomplished during this session may be transferred to a floppy diskette for the student's personal use.

A sequel to this introductory course, dealing with more complex statistical techniques, is being developed.

For more information on SAS/PC courses, phone me at 978-5128. To register for Introduction to SAS on the IBM PC, contact the Education Coordinator at 978-4565.

Joyce Bernstein
JBERNST at UTORONTO

IBM PC Tip

IBM PC users often set their command prompt to display the current directory path when in subdirectories. It helps keep us from getting lost in the directory tree. Have you ever issued the command **B:** when there isn't a floppy in Drive B? DOS tries to display the path, gets hung up, and then displays the ''Abort Retry Ignore'' message. When I chose ''Abort'', it aborted, only to try to read the current path to display the prompt. I have owned an IBM PC for two years and have read more IBM PC manuals than I care to, but never have I read about a simple way out of this position. I used to reboot or hunt for a scrap floppy to place in Drive B. Then I experimented and told my PC to ''Ignore'' the problem. (I typed ''I''.) Lo and behold, it gave me a message and a prompt to which I typed **C:**, and got back on track. I was amazed. Assuming this was a new feature of DOS 3.2, I tried it on DOS 2.0; it worked there too. It was there all along and I never knew it. How about you?

Terry Jones
TJ at UTORONTO

SALE

UTCS is offering great deals on terminals, printers, LSI and PDP equipment and components.

TERMINALS

- Lanpar Vision, XT-100
- Volker- Craig
- Digital
- Cybernex
- Olivetti
- Soroc

PRINTERS

- Diablo
- Data Products

MODEMS and COUPLERS

Complete LSI and PDP-11 Systems and Components

Inquiries and bids should be directed to:

Mike Konoby
University of Toronto Computing Services (UTCS)
Sandford Fleming Building
Room SF4306
Toronto, Ontario
M5S 1A1

Source Language Processor Upgrade

On January 13, UTCS upgraded the levels of the source language processors on the MVS and VM/CMS systems.

Also on that date, PL/I Release 5.1 went into production on the MVS and VM/CMS systems.

Waterloo "C" was upgraded to 1.3 for production on MVS and VM/CMS.

Lastly, Pascal 2.2 went into production under VM/CMS.

If you have any questions, please contact Advising Services at 978-HELP.

Herb Kugel
HERB at UTORONTO

Change Committee

Changes to the IBM Academic MVS Machine Services

1. ISPF/PDF was changed from Class A to B (November 13).
2. The support level for APL was changed from Class A to B (November 13).
3. The accounting box was moved from the trailer page to the messages page (December 10).

Changes to Academic VM/CMS Machine Services

1. The rates were decreased from 80% to approximately 50% of the previous rates (November 1).
2. MAILER went into full production status to enable electronic-mail support of gateways to other major networks (November 14).
3. LISTSERV was installed for production (November 18).
4. 3370 DASD was made available to users (December 8).
5. The MVS F-tape library became accessible from VM/CMS (December 18).
6. The LINPACK Numerical Library was added to VM/CMS for use with WATFOR-77 and VS FORTRAN on CMS. Support level is Class C.

Changes to GP UNIX Machine Services

1. The support class for the C-shell family was upgraded from C to B (October 22).
2. A Cornell modified Version 2 BSMTP was installed (November 6). Support is in test format.
3. A new SENDMAIL was installed for BSMTP and EAN (November 17).
4. A new line printer, DAEMON, was installed to handle laser printing and typesetting (November 20).
5. Mail DAEMON was replaced with a new name-server-based mail DAEMON (November 26).
6. UTORGPU was added to NetNorth (November 27).

Changes to Other Systems and Services

1. UTOROCI was added to NetNorth (November 26).
2. The Linotronic typesetter was installed (December 10).

Beverly Scarborough
BEVS at UTORONTO

Personnel Changes

Agatha Stevens, from Accounting, has left UTCS after eight years of service.

Greg Stopelli left the Micro Support Group to pursue other endeavours.

Michael Wagner has taken a one-year leave of absence.

Ted Sikorski has been promoted to IBM (VM) Supervisor in the Systems Group.

UTCS Noncredit Short Courses

Many people are finding that their involvement with computers and information processing systems is increasing. To help you get started, a number of short courses are offered on the various products and services supported by UTCS, and available on our systems. Enrollment in these courses is restricted to faculty, staff, and other users of our systems.

Please note that enrollment in microcomputer courses (SAS/PC101, WRDPERF101, WRDPERF102, WRDPERF301, and WRDPERF302) is restricted to faculty, graduate students, staff, and researchers.

Registration for short courses is required due to the limited seating capacity in the Education Facility and the number of terminals available for our hands-on courses. Registration forms may be picked up in the Engineering Annex, 11 King's College Road, Room 207.

A $10.00 Administration Fee per course is payable at the time of registration either by cash, cheque, or on a Customer Account Number (CAN). In addition, the CAN holder is responsible for any computer charges incurred during the hands-on courses.

The following courses are scheduled for February and March:

SAS/PC101 - Introduction to SAS/PC
Date: February 16-20, 1987
Time: 10:00 - 12:00 noon (Feb. 16-19)
10:00 - 1:00 p.m. (Feb. 20)

WRDPERF102 - Introduction to Administrative WordPerfect
Date: March 9-13, 1987
Time: 9:00 - 12:00 noon (March 9)
9:00 - 11:00 a.m. (March 10-13)

WRDPERF302 - Advanced Administrative WordPerfect Topics
Date: March 16-20, 1987
Time: 9:00 - 11:00 a.m.

A handout describing all short courses is available in the Information Office, Engineering Annex, Room 206.

Irene Rosiecki
ROSIECKI at UTORONTO

Introductory Cray Training

Two noncredit short courses, CRAY101 Introductory COS and FORTRAN, and CRAY102 Efficient Use of the System, are being offered to introduce experienced FORTRAN users to running jobs on the CRAY X-MP. Each course consists of five two-hour segments.

At present, each course carries a $5 materials fee. Participants must have the necessary CLSC computer accounts before they register. (To open accounts, please contact CLSC User Services, McLennan Physical Labs, Room 345.) All participants are required to register, since enrollment is limited to ten.

Course Descriptions

CRAY101 - Introductory COS and FORTRAN

This hands-on course will focus on skills required to run jobs on the X-MP without using permanent mass storage on the X-MP.

Topics: front-end station usage; COS job control language; Cray datasets; features of CFT and CFT77 FORTRAN compilers; and staging data from front-end computers.

Prerequisite: FORTRAN and a good working knowledge of editing and file management on a front-end computer.

Date: February 16-20, 1987
Time: 3:00 - 5:00 p.m.

Date: March 9-13, 1987
Time: 12:00 - 2:00 p.m. (March 9)
11:00 - 1:00 p.m. (March 10-13)

CRAY102 - Efficient Use of the System

This hands-on course will introduce some of the skills required to make efficient use of the X-MP.

Topics: vectorization on the Cray; the use of system libraries; FORTRAN optimization techniques; how and when to use the solid-state storage device; and the use of magnetic tapes on the X-MP.

Prerequisite: CRAY101 or equivalent experience.

Date: February 23-27, 1987
Time: 10:00 - 12:00 noon

Date: March 16-20, 1987
Time: 11:00 - 1:00 p.m.

Course Registration

To register for either course, call me at 978-4565.

Irene Rosiecki
ROSIECKI at UTORONTO

Recent Acquisitions in the Computer Library

ACM-SIGMOD International Conference on Management of Data, Washington, D.C., May 1986. *Proceedings.* New York, ACM, 1986.

ACM Symposium on Theory of Computing, 18th, Berkeley, Cal. *Proceedings.* New York, ACM, 1986.

Advances in computing research. Greenwich, Conn., JAI Press, 1983- (annual) Library has: v.1. Computational geometry. v.2. VLSI theory.

Aleksander, Igor et al. *Decision and intelligence.* Englewood Cliffs, N.J., Prentice-Hall, 1987. 203 p.

Alford, Mack W. et al. *Distributed systems methods and tools for specification - an advanced course.* Ed. by M. Paul and H.J. Siegert. Berlin, Springer-Verlag, 1985. 573 p.

Annual Review of Information Science and Technology. v.21(1986).

Barringer, Howard. *A survey of verification techniques for parallel programs.* Berlin, Springer-Verlag, 1985. 115 p.

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Computer Library continued

Bauer, Friedrich Ludwig and K. Samelson, ed. *Language hierarchies and interfaces.* Berlin, Springer-Verlag, 1976. 428 p.

Bishop, Judy. *Data abstraction in programming languages.* Wokingham, Eng., Addison-Wesley, 1986. 166 p.

Brookes, Stephen D. et al, ed. *Seminar on concurrency.* Berlin, Springer-Verlag, 1985. 523 p.

Canadian Commission for UNESCO. *New technologies in Canadian education.* Toronto, TV Ontario, 1984. 17 papers.

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Earnshaw, Rae A. et al, ed. *Fundamental algorithms for computer graphics.* Berlin, Springer-Verlag, 1985. 1042 p.

Foundations of Software Technology and Theoretical Computer Science, 4th Conference, Bangalore, India, Dec. 1984. *Proceedings*, ed. by M. Joseph and R. Shyamasundar. Berlin, Springer-Verlag, 1984. 468 p.

Grosz, Barbara, J., K.S. Jones, and B.L. Webber. *Readings in natural language processing.* Los Altos, Cal., Morgan Kaufmann, 1986. 664 p.

Guessarian, Irene. *Algebraic semantics.* Berlin, Springer-Verlag, 1981. 158 p.

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International Symposium on Programming. *Proceedings.* Berlin, Springer-Verlag. 4th(1980), 5th, 6th(1984).

International Symposium on Symbolic and Algebraic Computation, Cambridge, Eng., July 1984 (EUROSAM 84). *Proceedings*, ed. by J. Fitch. Berlin, Springer-Verlag, 1984. 396 p.

Jones, Neil D., ed. *Semantics-directed compiler generation.* Berlin, Springer-Verlag, 1980. 489 p.

Lambek, J. and P.J. Scott. *Introduction to higher order categorical logic.* Cambridge, University Press, 1986. 293 p.

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Nakajima, Reiji and T. Yuasa. *The IOTA programming system: a modular programming environment.* Berlin, Springer-Verlag, 1983. 217 p.

O'Donnell, Michael J. *Computing in systems described by equations.* Berlin, Springer-Verlag, 1977. 111 p.

Rasmussen, Jens. *Information processing and human-machine interaction: an approach to cognitive engineering.* New York, North-Holland, 1986. 215 p.

Rich, Charles and R.C. Waters, ed. *Readings in artificial intelligence and software engineering.* Los Altos, Calif., Morgan Kaufmann, 1986. 602 p.

RIMS Symposia on Software Science and Engineering, Kyoto, Oct. 1982. *Proceedings*, ed. by E. Goto et al. Berlin, Springer-Verlag, 1983. 232 p.

Rozenberg, G., ed. *Advances in Petri nets 1984.* Berlin, Springer-Verlag, 1985. 467 p.

Sherman, Mark Steven. *Paragon: a language using type hierarchies for the specification, implementation and selection of abstract data types.* Berlin, Springer-Verlag, 1985. 364 p.

SIGGRAPH'86, Dallas, August 1986. *Proceedings.* (Computer Graphics, v. 20, no. 4)

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Computer Library continued

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Symposium "Rekursive Kombinatorik", Universitat Munster, May 1983. *Logic and machines: decision problems and complexity,* ed. by E. Borger et al. Berlin, Springer-Verlag, 1984. 456 p.

Terry, Patrick D. *Programming language translation a practical approach.* Wokingham, Eng., Addison-Wesley, 1986. 443 p.

Wallach, Y. *Alternating sequential/ parallel processing.* Berlin, Springer-Verlag, 1982. 329 p.

Wirth, Niklaus. *Programming in Modula-2.* 3d ed. New York, Springer-Verlag, 1985. 202 p.

Workshop on Program Specification, Aarhus University, Denmark, Aug. 1981. *Program specification,* ed. by J. Staunstrup. Berlin, Springer-Verlag, 1982. 426 p.

Stephanie Johnston

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University of Alberta

Bischof, Walter F. and Caelli, Terry. *Parsing scale-space and spatial stability analysis.* 36 p. 86-06.

Sripada, N.Rao et al. *An AI application for process regulation and servo control.* 45 p. 86-07.

University of California, Los Angeles

Bennet, Mark Joseph. *Proving correctness of asynchronous circuits using temporal logic.* 199 p. CSD-860089.

Dolan, Charlie and Dyer, Michael G. *The world's shortest Prolog compiler.* 27 p. CSD-860068.

Worley, Duane. *A methodology, specification language and automated support environment for computer-aided design systems.* 251 p. CSD-860038.

Zamanzadeh, Behzad. *A graphical simulation system.* 294 p. CSD-860036.

Zukerman, Ingrid. *Computer generation of meta-technical utterances in tutoring mathematics.* 256 p. CSD-860097.

University of Illinois

Edelsbrunner, Herbert et al. *Testing the necklace condition for shortest tours and optimal factors in the plane.* 31 p. #1301.

Greenbaum, Steven. *Input transformation and resolution implementation techniques for theorem proving in first-order logic.* 258 p. #1298.

Stanford University

Davies, Byron. *CAREL: a visible distributed Lisp.* 15 p. #1126.

Feigenbaum, Joan. *Product graphs: some algorithmic and combinatorial results.* 60 p. #1121.

Malachi, Yonathan. *Nonclausal logic programming.* 145 p. #1227.

Nalwa, Vishvjit S. and Binford, Thomas O. *On detecting edges.* 48 p. #1130.

Nii, H. Penny. *Blackboard systems.* 86 p. #1123.

Rennels, Glen Douglas. *A computational model of reasoning from the clinical literature.* 244 p. #1122.

continued...

Computer Library continued

Theimer, Marvin M. *Preemptable remote execution facilities for loosely-coupled distributed systems.* 131 p. #1128.

Schoen, Eric. *The CAOS system.* 69 p. #1125.

Smith, David E. *Controlling inference.* 185 p. #1107.

Wang Institute

Ardis et al. *Core courses: Master of Software Engineering.* Wang Institute 1985-86. 43 p. TR-86-11.

Lomet, David B. *A simple bounded disorder file organization with good performance.* 33 p. TR-86-13.

Raghavan, Sridhar A. and Chand, Donald R. *Diffusion of software engineering methods.* 25 p. TR-86-10.

University of Wisconsin

Dewan, Prasun. *Automatic generation of user interfaces.* 136 p. #666.

Ramachandran, Umakishore. *Hardware support for interprocess communication.* 188 p. #667.

Rosenburg, Bryan S. *Automatic generation of communication protocols.* 126 p. #670.

Stewart, Charles V. and Dyer, Charles R. *A scheduling algorithm for the piplined image-processing engine.* 47 p. #664.

Vernon, Mary et al. *A comparison of performance Petri nets and queueing network models.* 21 p. #669.

Xerox Corp. Palo Alto Research Center

Beach, Richard J. *Setting tables and illustrations with style.* 239 p. CSL-85-3.

Donahue, James and Orr, Willie-Sue. *Walnut: storing electronic mail in a database.* 18 p. CSL-85-9.

Kornfeld, Cary D. *Architectural elements for bitmap graphics.* 122 p. CSL-85-2.

Stephanie Johnston

Documents at UTCS

All vendor-produced documentation may be ordered through the UTCS Information Office, Room 206, Engineering Annex. UTCS documents and selected vendor documents are also stocked there for purchase. For more information on prices, call Dale Wright at 978-4990. Whenever feasible, documents are made available online, and users areencouraged to print their own copies. On the MVS and VM machines, special commands have been provided for this purpose.

To print online documents on:

IBM MVS
WYLBUR users type "do document?"
TSO users type "help document"
APL users type ")LOAD 1 UTCSGUIDE<RETURN>HELP"

IBM VM/CMS
type "help document"

GP UNIX
use *ipr* command

See examples at the end of next page.

UTCS Documents in hardcopy

New:

Previously announced:

Academic's Guide to Microcomputer Systems
Character Sets for Highspeed Printing
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics
UTCS GUIDE TO PRODUCTS AND SERVICES: Accounting
UTCS Catalogue: Access, Part 1
UTCS Catalogue: Access, Part 2
UTCS Catalogue: IBM MVS Utilities
UTCS Catalogue: Numerical Products
UTCS Catalogue: Statistics Products
UTCS Catalogue: Text Products
UTCS Guide to Census Tapes
UTCS Guide to Tape Usage on VM/CMS
UTCS Guide to Kermit
UTCS Guide to Micro File Transfer Service
UTCS Guide to Text Processing on GP UNIX

UTCS Documents online	MVS MANUAL	CMS LISTING	GP UNIX	Forms Code
New:				
Previously announced:				
UTCS GUIDE TO PRODUCTS AND SERVICES: Introduction	INTRO	INTRO	/usr/doc/utcs/intro	*
UTCS GUIDE TO PRODUCTS AND SERVICES: Basics	BASICS	BASICS	/usr/doc/utcs/basics	*
UTCS Catalogue: Access, Part 1	ACCESS1	ACCESS1	/usr/doc/utcs/access1	*
UTCS Catalogue: Access, Part 2	ACCESS2		/usr/doc/utcs/access2	*
UTCS Catalogue: IBM MVS Utilities	MVSUTIL	MVSUTIL		*
Product-Function List	UTILLIST	UTILLIST		BXQD
UTCS Catalogue: Numerical Products	NUMCAT	NUMCAT		*
Product-Function List	NUMLIST	NUMLIST		BXQD
UTCS Catalogue: Statistics Products	STATCAT	STATCAT		*
Product-Function List	STATLIST	STATLIST		BXQD
UTCS Catalogue: Text Products	TEXTCAT	TEXTCAT	/usr/doc/utcs/textcat	*
UTCS Guide to APL	APLGD			*
UTCS Guide to APLXFR	APLXFR			*
UTCS Guide to BMDP	BMDP	BMDP		*
UTCS Guide to Census Tapes	CENSUS	CENSUS	/usr/doc/utcs/census	*
UTCS Guide to GP UNIX			/usr/doc/utcs/gpunix	*
UTCS Guide to GPJS	GPJSX	GPJSX	/usr/doc/utcs/gpjs	*
UTCS Guide to Highspeed Printing	PRINT	PRINT	/usr/doc/utcs/print	*
UTCS Guide to IBM MVS Online Storage	IBMDISK	IBMDISK		*
UTCS Guide to Kermit	KERMIT	KERMIT	/usr/doc/utcs/kermit	*
UTCS Guide to Micro File Transfer Service	MICROXFR	MICROXFR		*
UTCS Guide to Micro Laser Printing	MICRLASR	MICRLASR		*
UTCS Guide to SAS	SAS	SAS		*
UTCS Guide to SCRIBE		SCRIBE	/usr/doc/utcs/scribeguide	*
(For printing instructions, see page 1 of document)				

** Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ Use the 87SET command. Type ''help 87set''.

Documents at UTCS continued

UTCS Documents online	MVS MANUAL	CMS LISTING	GP UNIX	Forms Code
UTCS Guide to Series/1 Terminal Use	SERIES	SERIES		*
3270 Emulation:				
Cybernex APL100 and Volker Craig VC404	CYBER	CYBER		*
DM1520	DM1520	DM1520		*
Hardcopy Terminal	HARDCOPY	HARDCOPY		*
IBM 3101	IBM3101	IBM3101		*
IBM PC Kermit	PCKERMIT	PCKERMIT		*
SOROC IQ	SOROC	SOROC		*
VT52	VT52	VT52		*
VT100	VT100	VT100		*
UTCS Guide to SPSS	SPSS	SPSS		*
UTCS Guide to SUBUTILS	SUBUTILS	SUBUTILS		*
UTCS Guide to Tape Usage on VM/CMS		CMSTAPE		*
UTCS Guide to Text Processing on GP UNIX			/usr/doc/utcs/text	*
UTCS Guide to TFW.MAK in SCRIBE		TFWMAK	/usr/doc/utcs/tfwguide	*
UTCS Guide to TSO	TSOGD			*
UTCS Guide to UTDSUTIL	UTDSUTIL	UTDSUTIL		*
UTCS Guide to VM/CMS	CMSGD	CMSGD		*
UTCS Guide to WYLBUR	WYLINTRO			*
UTCS Rate Schedule (Commercial)		RATESCOM		‡
UTCS Rate Schedule (External)		RATESEXT		‡
UTCS Rate Schedule (Internal)		RATESINT		‡
UTCS WYLBUR Tutorial	WYLTUTOR			*
Other Documentation online:				
CLSC Documents				
CLSC Guide to Computing on the CRAY from the VM/CMS Front End		CRAYGD		*
Kermit				
Kermit Protocol Manual	KERMITPM	KERMITPM		YXOE
Kermit User Guide	KERMITUG	KERMITUG		YXOF
VM Tape Documents				
TapeMap User's Guide and Reference		TAPEMAP		*
VMTAPE Messages and Codes		VMTMSGS		YXOE
VMTAPE User's Guide		VMTUSER		YXOE
VMSECURE				
VMSECURE User's Guide		VMSECURE		YXOE
Waterloo SCRIPT				
Reference Manual	WSCRPTRF	WSCRPTRF		YXLC
User's Guide	WSCRPTUG	WSCRPTUG		YXLC
GML USER'S Guide	GMLUG	GMLUG		YXLC
OBS WYLBUR				
Messages and Codes	WYLMSGS			YXLD
Qwik Files	WYLQWIK			YXLD
Reference Summary	WYLREFCD			YXLG
Reference Manual	WYLREFMN			YXLD
7.0 Release Guide	WYLREL70			YXLC
User Guide	WYLUSER			YXLD

In these examples, the document to be printed is the UTCS Guide to Census Tapes (MANUAL/LISTING=CENSUS).
<RETURN> means RETURN or ENTER key.

TSO:	document census forms(yxle) <RETURN>
WYLBUR:	do document <RETURN> and respond to the prompts.
CMS:	document <RETURN> <RETURN> laser census listing (forms yxle <RETURN>
GP UNIX:	nohup ipr -8p -fyxle /usr/doc/utcs/census & <RETURN>

* *Recommended forms code for the 8700 is YXLE unless otherwise stated.*
‡ *Use the 87set command. Type "help 87set".*

Consulting and Enquiries

Applications Support & Advising Supervisor	Alex Nishri	KC308	978-7109
External Marketing Consultant	Ihor Prociuk	KC308	978-6875
Erindale College	Joe Lim	ER2035	828-5311
Scarborough College	William Barck	SC626	284-3173
Information Office	Dale Wright	EA206	978-4990
Account & Access Code Enquiries (U of T)	tba	MP337	978-8703
Account & Access Code Enquiries (External)	Sylvia May	MP337	978-7148
IBM PC Maintenance	Kam Mark	SF4306	978-5050
Tape Library (Academic Services)	Rosa Ciddio	MP368	978-7319
Tape Library (Administrative Services)	Miranda Fong	MP368	978-6693
Terminal Rentals	Louise Hunt	SF4306	978-3787
U of T Computer Library	Stephanie Johnston	EA206	978-2987
UTCS Noncredit Short Courses	Irene Rosiecki	EA207	978-4565

Consulting & Advising Services		300 Baud Interactive Services	978-6200
Phone:	978-HELP	1200 Baud Interactive Services	978-3959
CMS, TSO and GP UNIX userids:	ADVISOR	2400 Baud Interactive Services	978-7239
CMS Userid for mail problems:	POSTMSTR	Datapac	4320 0056
System Status Enquiries (GP UNIX)	978-4318	Telnet	0302043200056
System Status Enquiries (IBM)	978-7393	Tymnet	<backspace>DPAC;302043200056

UTCS Directory

Director	Dr. Warren Jackson	MP350	978-8948	WCJ at UTORONTO *
Associate Director	Eugene Siciunas	MP350	978-5058	EUGENE at UTORONTO *
Managers:				
Communications & Technical Support	Norman Housley	SF4306	978-4967	NORMAN at UTORONTO *
Internal Systems & Administration	Ron Vander Kraats	MP350	978-4428	RVK at UTORONTO *
Operations	Dr. Bob Chambers	MP350	978-7092	
Systems	Bill Lauriston	MP331	978-3579	BILL at UTORONTO *
User Interface	Don Gibson	KC308	978-7331	DON at UTORONTO *

Committees on Computing

Committee on Administrative Computing	Chair	Janice Oliver	978-4322	
UTCS Board	Chair	Prof. D.M. Nowlan	978-4984	NOWLAN at UTORONTO *
Supercomputer Users' Group at U of T	Chair	Prof. P.P. Kronberg	978-4971	

ER = Erindale
KC = Koffler Centre
SF = Sandford Fleming
SC = Scarborough
MP = McLennan Physical Labs

* NetNorth/BITNET/EARN

UTCS Terminal and Advising Sites

Names and Locations

- **Central Advising Office (CAO), 978-HELP**
- **Education Facility (Educ),** Koffler Centre, 214 College St., Room 308.
- **Engineering Annex (EA, CDF),**11 King's College Road, Rooms 103, 107, 107B, 201, 203.
- **Erindale College (Erin), 828-5339,** Mississauga Road, Erindale Campus, Rooms 2005, 2039, 2045
- **Robarts,** Robarts Library, 130 St. George St., Room 1061A
- **Scarborough College (Scar), 284-3122,** Military Trail, Scarborough Campus, Rooms S624, S625, S627, S628, S628A
- **Sidney Smith (Sidney),** 100 St. George St., Rooms 1071, 1073, 2105
- **St.Michael's College,** 121 St. Joseph St., Room 107
- **Trinity College,** 6 Hoskins Ave., Room 024
- **Victoria University,** 73 Queens Park Cres.

Sites	**Hours of Access**				**Restrictions***	**Advising**
	Mon-Thurs	**Fri**	**Sat**	**Sun**		
CAO	10:00-18:00	10:00-18:00	closed	closed	Research	978-HELP
CDF	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	No
EA	24 hrs	24 hrs	24 hrs	24 hrs	None	978-HELP for Research
Educ	9:00-18:00	9:00-18:00	closed	closed	Research**	978-HELP
Erin (2039)☐	9:00-17:00	9:00-17:00	12:00-16:00	12:00-16:00	Research	Rm 2005
(2045)	24 hrs	24 hrs	24 hrs	24 hrs	Undergrads	Rm 2005
(235†)	8:00-22:00	8:00-17:00	closed	closed	None	Rm 2046
Robarts	8:30-24:00	8:30-24:00	9:00-17:00	13:00-22:00	None	978-HELP for Research
Scar	24hrs°	24hrs°	24hrs°	24hrs°	Research	Rm S626
					Undergrads	Rm S626-A
Sidney	7:00-24:00	7:00-24:00	7:00-24:00	7:00-24:00	None	978-HELP for Research
St.Michael's	24 hrs	24 hrs	24 hrs	24 hrs	None	Arranged by College
Trinity	8:00-22:00	8:00-22:00	8:00-22:00	8:00-22:00	None	Arranged by College
Victoria	8:30-23:00	8:30-23:00	closed	closed	None	Arranged by College

* Research includes graduates, faculty, staff. ** May be unavailable due to UTCS courses. ☐ key access available.
° printers available some of the time. † access restricted to building hours.

Advising Hours

CAO	Monday through Friday, 10:00 - 18:00
Scarborough	Monday through Friday, 09:00 - 16:30, Wednesday and Friday 18:00 - 24:00, Saturday 10:00-17:00
Erin	Monday through Friday 09:00 - 22:00, Saturday & Sunday 12:00-16:00

Sites	**PACX**	**Network Terminal Server**	**CMS Terminals**	**Printers**	**DCS/Micros**
CDF	Y	N	N	Y	N
EA	N	Y	Y	Y	N
Educ	Y	N	N	N	N
Erin	Y	Y	N	Y	N
Robarts	Y	N	Y	Y	Y
Scar	Y	Y	N	Y	N
Sidney	N	Y	Y	Y	Y
St.Michael's	Y	N	N	Y	Y
Trinity	N	N	Y	Y	Y
Victoria	Y	N	N	Y	Y

(Y=yes, N=no)

UTCS Services

The principle mandate of UTCS is to plan, implement, and operate computer facilities and "common-carrier" networks, and to plan and support divisional, departmental or project computer facilities as requested.

UTCS Centrally Owned and Managed

Systems

IBM MVS

- TS0, WYLBUR,APL, Batch
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system
- Xerox 8700 Laser Printing

IBM VM/CMS

- General Purpose Timesharing; access to NetNorth, BITNET, and EARN networks; access to Cray X-MP
- 4381-P02 processor, 16 megabytes of memory
- CP operating system, VM/SP HPO R3.4
  CMS timesharing system, VM/SP Release 3
  RSCS spooling system, Release 3
  CRAY station Release 4

GP UNIX

Technical Assistance: 978-8853

- General Purpose Timesharing under SUN UNIX 3.2
- SUN 3/280, 8 megabytes of memory
- access to Linotype typesetter
- offers a sophisticated and powerful environment for text processing
- offers a sophisticated programming environment suitable for commercial software development or testing
- full access to USENET, an electronic technical information exchange facility
- offers excellent electronic mail facilities and ability to send or receive mail from most computer networks world wide, such as UUCPNET, ARPANET, NetNorth, BITNET, CSNET, CDNNET
- full access to BITNET/NetNorth/EARN network

Services

Communications & Technical Support

Primary Phones: 978-3787, 978-4967

- Communications Group provides communications systems, terminals, modems, data channels: consulting and installation.
- Field Service Group installs and maintains communications and computer systems, particularly IBM PCs and Micro Vaxes, on a contract basis or on a cost-per-call basis.
- provides consulting on computer systems technology and installs computer systems
- provides access between the IBM systems and machines using UNIX, VMS and other operating systems. Ethernet and Pronet technologies are used over various transmission media including optical fibre. More basic communications techniques are also used for moderate speed links.
- provides consulting on local area networking and installs LANS
- provides access to NetNorth (BITNET), the North American Universities Network; and USENET, the UNIX networking fraternity
- will provide a communications solution to department needs on a contractual basis.

User Interface Group

Primary Phone: 978-HELP

- provides advising, consulting and documentation on:
  - command languages
    including CMS, TS0, WYLBUR, JCL and UNIX
  - high level languages
    including FORTRAN, APL and PL/I
  - packages and libraries
    including SAS, SPSS-X, BMDP, IMSL and NAg
  - editors and formatters
    including XEDIT, TS0, WYLBUR, ed, SCRIBE, nroff/troff
- high quality typesetting
- installs and maintains application packages
- provides courses on the more popular services
- provides general micro support
  - selection consulting for hardware and software
  - Micro Lab for evaluation of hardware and software
  - advice on University discounts
  - media conversion and data transfer
  - operates UTCS Microcomputer Bulletin Board System
  - offers Micro Laser Printing Service
  - offers 35mm slide production service using Polaroid Palette
  - administers Local Area Network of PCs for research use

Facilities Managed by UTCS

Administrative Computing

- administrative IMS/VS, DB/DC, DB2, Batch and TS0
- 4381-R03 processor, 32 megabytes of memory
- MVS operating system

UNIX SAS (Statistical Analysis Services)

- UNIX Statistical Analysis Service (Dept. of Statistics only)
- PDP-11/70, 4 megabytes of memory
- UNIX Seventh Edition
- SUN 3/180
- SUN 3/75
- SUN 2/120
- SUN 3.2 UNIX

Computer Disciplines Facility/VAX

VAX-11/780, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory
VAX-11/750, 4 megabytes of memory

- Computer Science interactive access
- UNIX (Berkeley UNIX 4.2BSD)

Computer Disciplines Facility/PC

- 97 TI Professional Computers connected in a Local Area Network
- introductory Computer Science instruction
- MS-DOS with Turing environment

Scarborough College Systems

VAX-11/750, 5 megabytes of memory
VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Erindale College Systems

VAX 8200, 8 megabytes of memory

- instructional access using VMS
- research access

VAX-11/750, 5 megabytes of memory

- instructional access using UNIX (Berkeley UNIX 4.2BSD)

Institutional Relations System

VAX-11/750, 8 megabytes of memory

- database services to the owner departments using VMS

EPAS Facility

- 4361-5 processor, 16 megabytes of memory
- general VM/CMS services to the owner departments

Centre for Large Scale Computation (CLSC)

- Cray Research Inc. X-MP/22
- 2 processors, 2 megawords main memory
- solid state disk (SSD) with 16 megawords of storage
- COS 1.15 operating system
- VAX-11/750 + microVAX II providing VMS front-end services
- VM front-end services provided by UTCS 4381-P02

Software List

Each programming language or package available at UTCS has a support level. In general, Class A Products receive full support, Class B limited support (as time and resources allow), Class C no active support. For complete details of UTCS product support policy, see the UTCS GUIDE TO PRODUCTS AND SERVICES:Introduction.

MVS SOFTWARE

MVS Package/ Compiler	Support Level	Version
Graphics Packages		
PLOTBASIC (FORTRAN)	A	
PLOTBASIC EXTENDED ROUTINES	A	
SAS/GRAPH	A	82.4; 5.08
SURFACE II	C	
ISPF/PDF	B	1
WYLBUR	A	7.0
Languages		
APL (Sharp)	B	May 83
ALGOLW (Stanford)	C	n/a
ASSEMBLER(F)	C	2.1
A.A.E.C. PASCAL	C	2.0
FORTRAN H EXT.	B	2.2.1
LISP	C	
MARKEXAM	C	
PL/C	C	
PL/I CHECKOUT COMPILER	B	1.3.0
PL/I OPT COMPILER	B	1.4.0; 1.5.0
SNOBOL 4	C	3.5
SPITBOL	C	
UTCS FORTRAN UTILITIES	B	
VS COBOL	C	2.4
VS FORTRAN	A	1.4.1
WATBOL	C	V3L2
WATFIV	B	
WPASCAL	C	(U of Waterloo/ West Valley Joint Community College Version)
Numerical Packages		
DYNAMO	B	4.07
EISPACK	C	4
FORMAC	C	
FUNPACK	C	
GPSS	A	Rel.1, Mod. Level 4
IMSL	A	9.2
LINPACK	C	
MINOS	C	4.0
MINPACK	C	1
MPSX	C	Rel. 1, Mod. Level 6
NAg	A	Mark 11
Statistical Packages		
BMD	C	
BMDP	A	Level 85
GENSTAT	C	4.04B
IMSL	A	9.2
NAg	A	Mark 11
NTSYS	C	Dec. 1982
SAS	A	82.4; 5.08; 5.15
SPSS	C	9.1
SPSSX	A	2.1
TSP	C	3.5
Text-Processing Packages		
COGS(Concordance Generating System)	B	3.1
KWIC	C	
OCP (Oxford Concordance Program)	C	1.4
Waterloo SCRIPT	B	85.1
Utilities		
DSMAP	A	
FILEBOL	C	
GRIPE	A	
IBM UTILITIES		
IEBGENER	A	
IEBCOPY	A	
IEHMOVE	A	
DFSORT	A	6.0
TAPEPRT	A	
TAPEXRAY	A	
TCOPY	A	
UTCS FORTRAN UTILITIES	B	

VM/CMS SOFTWARE

VM/CMS Package/ Compiler	Support Level	Version
Communications Packages		
FTS	A	
Kermit	A	
MICROLASER	A	
Graphics Packages		
SAS/GRAPH	A	82.3; 5.08
PLOTBASIC(FORTRAN)	C	
Languages		
ASSEMBLER(F)	C	
Concurrent Euclid	C	1.9
FORTUTILS	A	2.0
PL/I CHECKOUT COMPILER	B	1.3.0
PL/I OPT COMPILER	B	1.4.0; 1.5.1
REXX	A	
SNOBOL 4	C	3.5
Turing	C	
VS FORTRAN	A	1.4.1
VS PASCAL	C	2.1; 2.2
Waterloo C	C	1.2
WATFIV	C	V2L0
WATFOR-77	A	1.3
Numerical Packages		
IMSL	A	9.2
Linpack	C	
Statistical Packages		
BMDP	A	Level 83
IMSL	A	9.2
Minitab	B	82.1; 5.1
SAS	A	82.3; 5.08
SPSSX	A	2.1
Text-Processing Packages		
SCRIBE	A	4(1400)-1
Waterloo SCRIPT	B	85.1
XEDIT	A	
8700 Pseudotypesetting	A	n/a
MICROLASER	A	
Utilities		
FORTUTILS	A	2.2
TPRINT	C	

Software List continued

UNIX SOFTWARE

UNIX Package/ Compiler	Support Level	Version
Communications Packages		
kermit	B	4C(058)
macget/macput	C	
netcopy, netexec, to (NetNorth Tools)	B	
xmodem	C	
ftp, rsh, rlogin, telnet, rcp (Access via TCP/IP to most of the networked machines on all three campuses)	B	
rn/Pnews	B	
mail, mh, Mail		
rje	B	
Languages		
cc	A	
f77	C	
ratfor	C	BSD std.
ttc	C	
pc	C	BSD std.
yacc	C	
awk	C	
adb,dbx	C	BSD std.
Text-Processing Facilities		
ed	A	
vi	C	
emacs	C	
spell	C	
diction/explain	C	
eqn	A	
tbl	A	
pic	C	
troff	A	
nroff	A	
TeX	C	
Utilities		
crypt	A	BSD std.
compress	C	BSD std.
csh	B	BSD std.
diff	A	BSD std.
grep	A	BSD std.
ipr	B	
learn	C	BSD std.
patch	C	
sed	A	BSD std.
sort	A	BSD std.
sh	A	BSD std.
tar	A	BSD std.
uniq	A	BSD std.

MICROCOMPUTER SOFTWARE

The following are microcomputer software packages for which UTCS can provide either support or some information. As with mainframe products, micro packages receive full support (Class A), limited support (Class B), or no active support (Class C). The specific criteria differ from those for mainframe classes and are outlined in the Academic's Guide to Microcomputer Systems.

Package/ Compiler	Support Level	Version
Communications Packages		
Kermit (MS-DOS)	A	2.27d
Kermit (APPLE II)	A	
Kermit (CP/M)	C	
Kermit Macintosh	B	
PC TALK3	C	
PC PLOT III	A	
ProComm	C	2.3
MacTerminal	B	
WYLBUR/PC	C	
Database Managers		
AskSam	C	2.2
Clipper	B	
DATAEASE	B	
dBASE II (CP/M)	B	
dBASE II (MS-DOS)	C	
dBASE III	A	1.1
dBIIICompiler	B	1.1
FoxBASE	C	2.14u
Notebook II	B	2.03
REFLEX	B	
ViewFinder III	B	
ZyINDEX	B	
Graphics Packages		
DR HALO	C	
Microsoft CHART (Macintosh)	C	
MacPaint	B	
35mm Express	B	
Languages		
BASIC	A	
Microsoft FORTRAN	C	
TURBO Pascal	B	
WATFOR-77	A	
Operating Systems, Utilities		
APPLE Turnover	A	
CP/M	B	
FASTBACK	B	
PC-DOS	A	
Sidekick	B	
SuperKey	C	
TURBO Lightning	C	
XenoDisk	A	1.41
Spreadsheet Packages		
APPLEWORKS	C	
Lotus 1-2-3	B	
Multiplan (Macintosh)	C	
Statistical Packages		
MINITAB	C	
PowerStat	C	1.04
SAS/PC	A	6.02
SPSS/PC +	A	
Statpro	C	2.0c
Word-Processing Packages		
Gutenberg Senior	C	
FinalWord II	B	2.0
MacWrite	C	
Microsoft Word (MS-DOS)	B	2.0
Microsoft Word (Macintosh)	B	
Nota Bene	C	
T^3	B	
Volkswriter Scientific	C	
WordPerfect	A	4.1
WordStar	B	

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